

Draft Environmental Assessment Mount Silcox Wildlife Management Area Forest Habitat Project



***Montana Fish,
Wildlife & Parks***



Region 1

Montana Fish, Wildlife & Parks

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Phone 406-752-5501

Draft Environmental Assessment Checklist

Mount Silcox Wildlife Management Area Forest Habitat Project

June 2017

Part I. Proposed Action Description

1. Type of proposed action:

Montana Fish, Wildlife & Parks (FWP) proposes to conduct a forest habitat enhancement project on 92 acres of the Mount Silcox Wildlife Management Area (MSWMA). The proposed project would improve aspen habitats; enhance or create openings in the forest canopy to increase bunchgrass and woody browse production; promote development of diverse, multi-story stand structure favored by sensitive species including Cassin's finch, Clark's nutcracker, evening grosbeak, Lewis's woodpecker, pileated woodpecker, and varied thrush; and implement forestry treatments that mimic ecological processes, promote development of ecologically site-appropriate habitat conditions, and reduce the susceptibility of forests to uncharacteristic disturbance events (such as stand replacement fires and bark beetle epidemics). FWP would use a combination of treatments including timber harvest, hand thinning, and prescribed burning to accomplish these objectives.

2. Need for action:

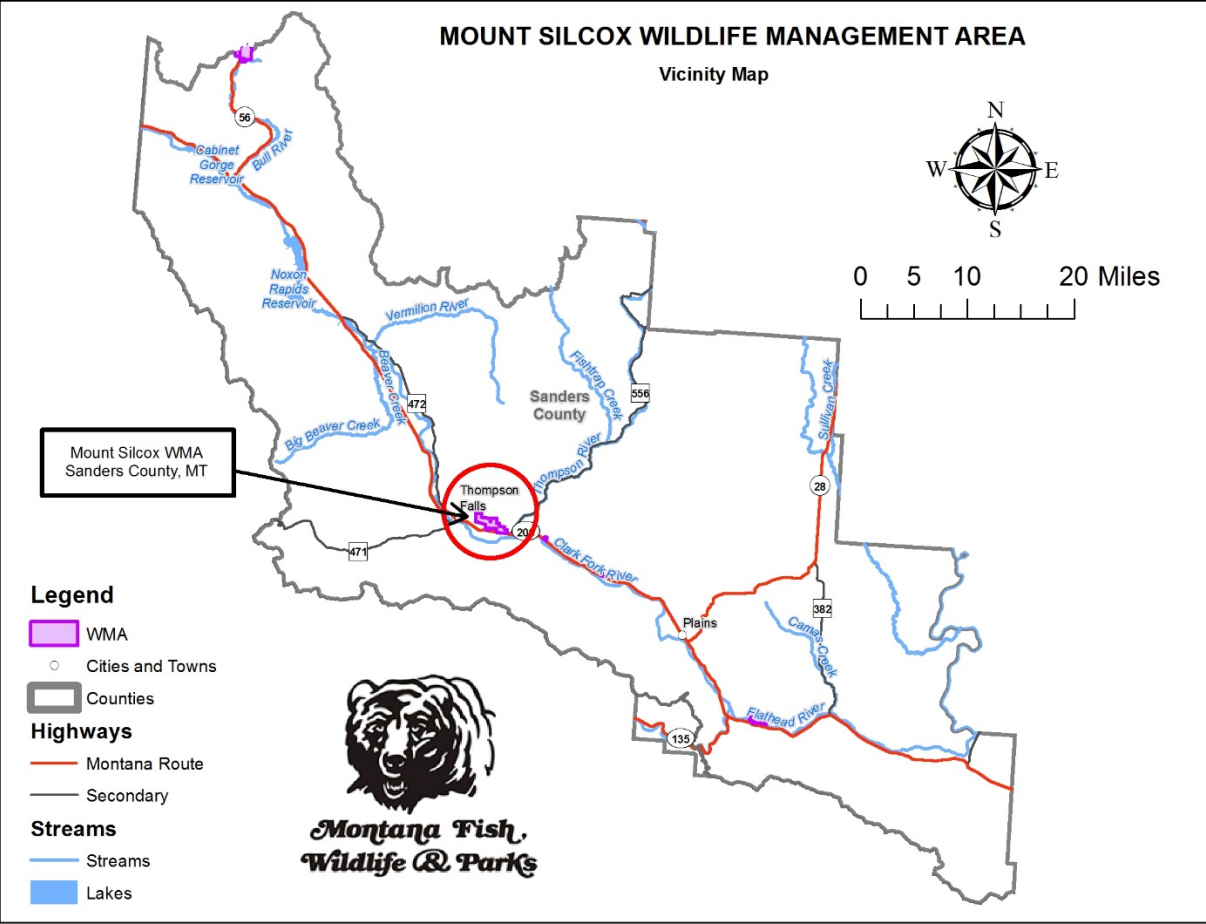
The MSWMA was acquired in 1990 with the primary goal of providing winter and spring range for bighorn sheep, winter range for elk, year-round habitat for white-tailed deer and mule deer and turkeys, and to provide recreational access to adjacent public lands. FWP is also obligated by state law in accordance with the provisions of § 87-1-201(9)(a)(iv) to "address fire mitigation, pine beetle infestation, and wildlife habitat enhancement..." on forested lands under the department's jurisdiction.

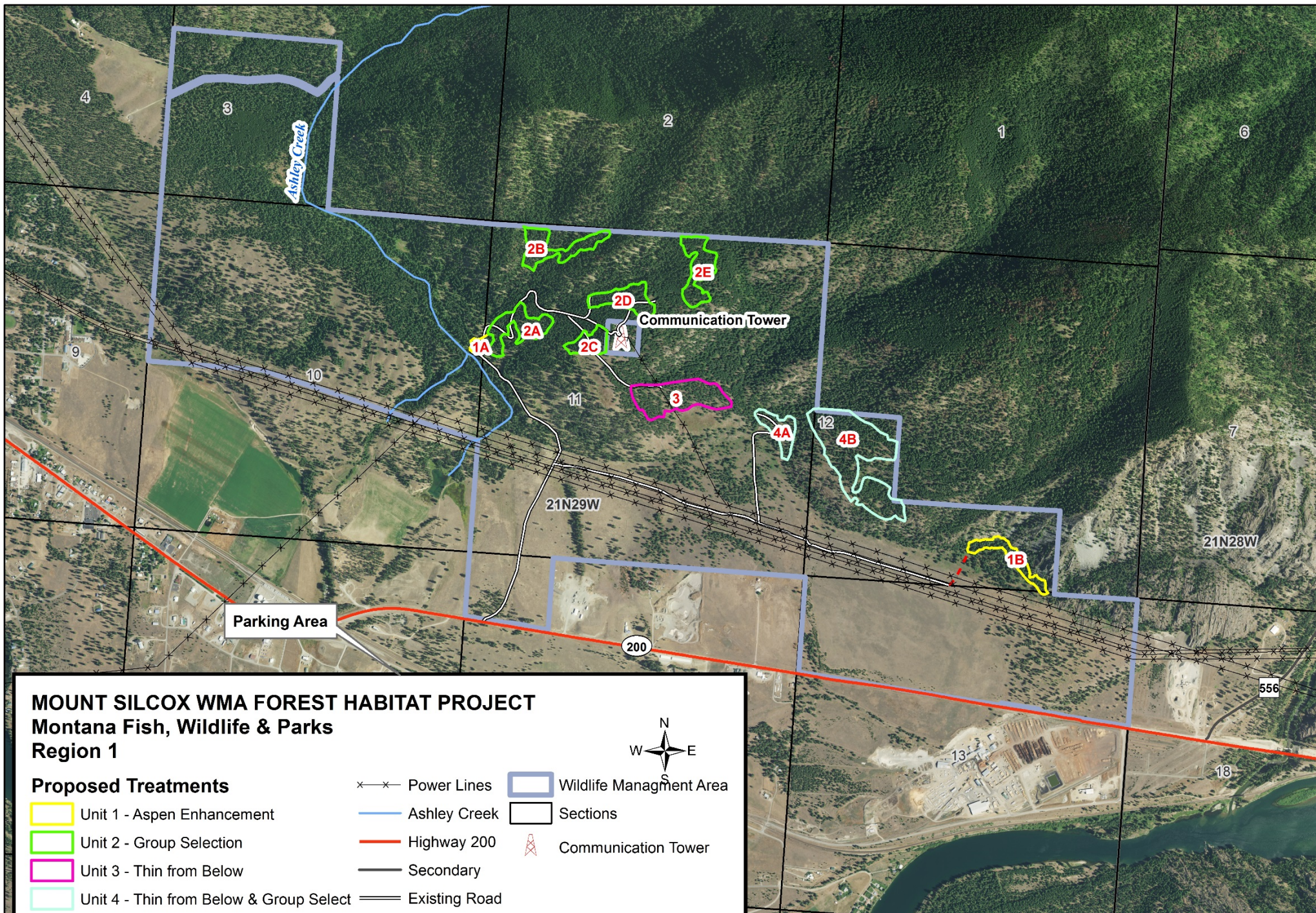
According to the Lower Clark Fork Elk Management Unit Plan (FWP 2005) and the North Clark Fork Bighorn Sheep Management Plan (FWP 2010), fire suppression and the resulting conifer in-growth in ponderosa pine/bunchgrass forests, as well as conifer expansion into shrub fields and grasslands, has led to the deterioration of winter range forage productivity. Fire exclusion has also led to conifer succession in seral quaking aspen stands and is resulting in a decline of aspen stands in the project area. An analysis of successional stages (vegetation conditions in terms of species composition, cover, and height) conducted for the MSWMA Forest Management Plan (FWP 2017) found that the current distribution of successional stages is moderately departed from the historic range of variability (HRV), putting forests on the WMA at risk for uncharacteristic disturbance events.

3. Location of project:

The MSWMA is located 2.5 miles east of downtown Thompson Falls in Sanders County, Montana (see Figure 1). The property is north of Highway 200 and the Clark Fork River at the base of the slope of the southern extent of the Cabinet Mountains. The project area includes portions of Sections 10, 11, 12, 13, & 14 of Township 21 North, Range 29 W.

Figure 1 - Vicinity Map of the Mount Silcox Wildlife Management Area





4. Agency authority for proposed action:

§ 87-1-201, MCA gives FWP the authority to protect, enhance, and regulate the use of Montana's fish and wildlife resources for public benefit now and in the future. Habitat improvements in the proposed project would enhance native plant communities so that they continue to support game and other wildlife species for the public to enjoy.

§ 87-1-201 (9)(a)(iv), MCA requires FWP to address fire mitigation and wildlife habitat enhancement, giving priority to forested lands in excess of 50 contiguous acres in any state park, fishing access site, or wildlife management area under the department's jurisdiction. The proposed project would implement forestry treatments that mimic ecological processes, promote development of ecologically site-appropriate habitat conditions, and reduce the susceptibility of forests to uncharacteristic disturbance events (such as stand replacement fires and bark beetle epidemics).

The Montana Statewide Elk Management Plan (2005) directs FWP to improve elk habitat through projects designed to improve vegetative diversity and to maintain or increase carrying capacity on winter range. The proposed project would work toward meeting this goal by improving aspen stands and enhancing or creating openings in the forest canopy to increase bunchgrass and woody browse production.

The Montana Bighorn Sheep Conservation Strategy (2010) identifies habitat issues affecting bighorn sheep populations, and habitat deterioration due to fire suppression is a continual problem on the Thompson Falls bighorn sheep range. The proposed project would attempt to enhance sheep forage such as bunchgrasses and certain shrubs by enhancing and creating openings in the forest canopy.

The Fish and Wildlife Commission approved FWP's proposal to proceed with an environmental analysis of public review of this project at their December 8, 2017, meeting.

5. Name, address, and phone number of project sponsor:

Not applicable

6. Anticipated schedule:

Public comment period: June 5 – July 5, 2017

Decision notice published: July 13, 2017

Estimated commencement date: December 1, 2017

Estimated completion date: July 15, 2020

Current status of project design (% complete): 60%

7. Project size:

	<u>Acres</u>		<u>Acres</u>
a) Developed:		(d) Floodplain	<u>0</u>
Residential	<u>0</u>		
Industrial	<u>0</u>	(e) Productive:	
(existing shop area)		Irrigated cropland	<u>0</u>
(b) Open Space/Woodlands/ Recreation	<u>92</u>	Dry cropland	<u>0</u>
(c) Wetlands/Riparian Areas	<u>0</u>	Forestry	<u>0</u>
		Rangeland	<u>0</u>
		Other	<u>0</u>

8. Listing of any other local, state, or federal agency that has overlapping or additional jurisdiction:

- (a) **Permits:** A temporary road use permit will be required for access through a BNSF Railway in-holding.
- (b) **Funding:** Costs to FWP for implementing the proposed action are expected to be covered by the sale of merchantable timber byproduct. If the revenue does not exceed the project costs, FWP would provide funding through its legislatively established Forest Management Account pursuant to the provisions of § 87-1-621, MCA and/or seek grant funding opportunities. Any revenue in excess of project costs will be deposited in this account. The U.S. Forest Service would provide some in-kind service and assistance with prescribed burning.
- (c) **Other Overlapping Jurisdictional Responsibilities:**

<u>Agency Name:</u>	<u>Type of Responsibility:</u>
U.S. Forest Service	Fire Protection
Sanders County	Weed Management
Montana State Historic Preservation Office	Cultural and Historic Resources

9. Description and analysis of reasonable alternatives:

Alternative A: No Action

No forest management activities would be implemented and status quo forest conditions would be maintained. Unless a significant forest disturbance event occurred, forest succession would continue to occur on the current trend towards increasing density and canopy closure and decreasing shade-intolerant understory vegetation. FWP would continue to manage the MSWMA for wildlife and recreation activities and continue noxious weed management.

Alternative B: Proposed Action

FWP would implement the following activities on the MSWMA:

- Timber harvest and hand thinning on 92 acres of conifer and aspen/mixed-conifer forest.
- Broadcast burning on 7 acres aspen/mixed-conifer forest.
- Road maintenance on 4 miles of existing road.
- Submerchantable material generated from timber harvesting would be reduced to a level that meets or exceeds Montana's State Hazard Reduction Law through piling and burning.
- Spot herbicide treatments along roads, log landings, and disturbed areas for up to 3 years post-treatment.

See Appendix A for a detailed description of current conditions and silvicultural prescriptions for the proposed action.

PART II. ENVIRONMENTAL REVIEW CHECKLIST

1. Evaluation of the impacts of the Proposed Action including secondary and cumulative impacts on the Physical and Human Environment.

A. PHYSICAL ENVIRONMENT

1. <u>LAND RESOURCES</u> Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil, which would reduce productivity or fertility?			X		Yes	1b
c. Destruction, covering, or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition, or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources.

1b. Timber harvest would adhere to Montana Forestry Best Management Practices (BMP) to minimize soil compaction and displacement. Ground-based equipment would be restricted to periods of dry, frozen, or snow-covered conditions. Existing skid trails would be utilized if they are in suitable locations to minimize soil physical disturbance.

2. <u>AIR</u> Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Emission of air pollutants or deterioration of ambient air quality? (Also see 13c.)			X		Yes	2ab
b. Creation of objectionable odors?			X		Yes	2ab
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. <u>For P-R/D-J projects</u> , will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a.)		X				
f. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Air:

2ab. Slash pile burning would introduce particulate matter into the local airshed, which may temporarily affect local air quality. Burning would be conducted in accordance with open burning timing restrictions and comply with slash treatment regulations. Dust may be created from log hauling on existing native surface road. Contract clauses would provide for the use of dust abatement or requiring trucks to reduce speed, if necessary.

3. <u>WATER</u>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Discharge into surface water or any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?			X		Yes	3b
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water-related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. <u>For P-R/D-J</u> , will the project affect a designated floodplain? (Also see 3c.)		X				
m. <u>For P-R/D-J</u> , will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a.)		X				
n. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Water Resources:

3b. The majority of the project is located far from any water resources. A small portion of Unit 1A is located within 100 feet of Ashley Creek. Skid trails associated with timber harvest have the potential to disturb soil and vegetation cover resulting in minor and temporary changes to drainage patterns and surface runoff. The project would implement Forestry BMPs and adhere to the Montana State Streamside Management Zone Law (SMZ) to minimize any potential risk of sediment delivery to water resources.

4. <u>VEGETATION</u> Will the proposed action result in?	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Changes in the diversity, productivity, or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X		No	4ab
b. Alteration of a plant community?			X		No	4ab
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?			X		Yes	4e
f. For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		X				
g. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Vegetation:

4ab. The project would decrease the amount of overstory Douglas-fir and ponderosa pine canopy cover. The project would potentially increase the amount of shade-intolerant understory species, quaking aspen, and conifer regeneration. By removing competing vegetation within the treatment units, the project would also potentially increase the productivity and vigor of the residual vegetation.

4e. Ground disturbance associated with road use and maintenance and operating equipment off-road has the potential to create areas that would allow for the establishment or spread of noxious weeds. Noxious weed spread will be mitigated by requiring equipment to be washed and inspected before entering the MSWMA, minimizing ground disturbance through the implementation of Forestry BMPs, immediately reseeding disturbed areas with a native grass seed mix, and treating affected areas or areas at risk with herbicide for up to 3 years post-treatment.

5. <u>FISH/WILDLIFE</u>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		No	5bc
c. Changes in the diversity or abundance of nongame species?			X		No	5bc
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				5f
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest, or other human activity)?		X				
h. <u>For P-R/D-J</u> , will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f.)		X				
i. <u>For P-R/D-J</u> , will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d.)		X				
j. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Fish and Wildlife:

5bc. The project is designed to increase forage abundance and quality, which will benefit big game species such as white-tailed deer, mule deer, bighorn sheep, and elk. The increase in forage should at least retain stability in the abundance of game animals and, hopefully, cause an increase in the number of game animals utilizing the MSWMA. Bird species and other nongame species should show a positive impact from the change in diversity of the vegetative structure.

5f. There are no known threatened or endangered species to inhabit the MSWMA.

B. HUMAN ENVIRONMENT

6. <u>NOISE/ELECTRICAL EFFECTS</u> Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Increases in existing noise levels?			X		No	6ab
b. Exposure of people to severe or nuisance noise levels?			X		No	6ab
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Noise/Electrical:

6ab. The nearest occupied residence is less than 1/2 mile away from the project area. The MSWMA is open to the public from April 1 through December 2 annually and is near the town of Thompson Falls, Montana. Public access the MSWMA is walk-in only, and the area is used in the spring through fall by the public for hiking, hunting, and wildlife viewing. Logging and trucking equipment will increase noise levels within the project area during the operating periods.

7. <u>LAND USE</u>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use, the presence of which would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Use:

8. <u>RISK/HEALTH HAZARDS</u>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan, or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. For P-R/D-J, will any chemical toxicants be used? (Also see 8a)		X				
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Risk/Health Hazards:

9. <u>COMMUNITY IMPACT</u> Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?			X		No	9cde
d. Changes in industrial or commercial activity?			X		No	9cde
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?			X		No	9cde
f. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Community:

9cde. This Project will create or sustain local jobs while the project is ongoing. The project will also benefit the successful applicant. Log hauling and contractor traffic will increase during the project. Roads and other infrastructure that will be used by contractors were designed (and will be maintained) to support commercial logging and log transport activities.

10. <u>PUBLIC SERVICES/TAXES/UTILITIES</u>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?			X		No	10b
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased use of any energy source?			X		No	10d
e. Define projected revenue sources.						10e
f. Define projected maintenance costs.						10f
g. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Public Services/Taxes/Utilities:

10b. The Project will increase state and local tax revenues from the sale of fuel and equipment and from employees' income.

10d. Fuel and electricity will be required to treat stands and process the timber byproduct.

10e. Depending on the market conditions of logging costs, hauling costs, and delivered log prices for forest products at the time the timber is sold, the project may generate revenue for FWP's Forest Management Account to be used for future forest management projects.

10f. Post-treatment maintenance costs may be incurred for slash disposal and noxious weed herbicide treatments. FWP would provide funding for maintenance cost from its Forest Management Account.

11. <u>AESTHETICS/RECREATION</u>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?			X		No	11a
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report.)		X				
d. <u>For P-R/D-J</u> , will any designated or proposed wild or scenic rivers, trails, or wilderness areas be impacted? (Also see 11a, 11c.)		X				
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Aesthetics/Recreation:

11a. Some treated stands may be visible from the nearby town of Thompson Falls, Montana. The retention of residual trees would be clumpy and at a variable spacing and the overall reduction of forest cover is minimal compared to the amount of forested area being left untreated.

12. <u>CULTURAL/HISTORICAL RESOURCES</u> Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Destruction or alteration of any site, structure, or object of prehistoric, historic, or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. <u>For P-R/D-J</u> , will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a.)						
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Cultural/Historical Resources:

SIGNIFICANCE CRITERIA

13. <u>SUMMARY EVALUATION OF SIGNIFICANCE</u>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action, considered as a whole:						
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources that create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects, which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard, or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. <u>For P-R/D-J</u> , is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e.)		X				
g. <u>For P-R/D-J</u> , list any federal or state permits required.						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Significance Criteria:

PART III. PUBLIC PARTICIPATION AND COLLABORATORS

1. Public Involvement:

The public will be notified in the following manners to comment on this current environment assessment (EA):

- Public notices in each of these papers: *The Sanders County Ledger*.
- Public notice on the Fish, Wildlife & Parks web page: <http://fwp.mt.gov> (News, Recent Public Notices, Environmental Assessments).
- Copies of this EA may be obtained by mail from Thompson Falls Resource Office, 601 N. Columbia Street, Thompson Falls, MT 59873; by phoning 406-827-4389; or by emailing bsterling@mt.gov.

Comments should be directed by: mail to Bruce Sterling, FWP, 601 N. Columbia Street, Thompson Falls, MT 59873; phone to 406-827-4389; or email to bsterling@mt.gov. Comments must be received by FWP no later than 5:00 p.m. on July 5, 2017.

Notice of this environmental assessment will be distributed to the neighboring landowners and interested parties to ensure their knowledge of the proposed project.

This level of public notice and participation is appropriate for a project of this scope, having limited impacts, many of which can be mitigated.

PART V. EA PREPARATION

1. Based on the significance criteria evaluated in this EA, is an EIS required?

No, based upon the above assessment, which has identified a limited number of minor impacts to the physical and human environment that will be either for a short duration or that the effects of the proposed project can be mitigated below the level of significance, an EIS is not required and an environmental assessment is the appropriate level of review.

2. Persons responsible for preparing the EA:

Bruce Sterling, Wildlife Biologist, Thompson Falls, MT
Jason Parke, Forester, Helena, MT

3. List of entities consulted during preparation of the EA:

Montana State Historic Preservation Office

4. References:

FWP. 2005. Montana's statewide elk management plan. Montana Fish, Wildlife & Parks. Helena, MT. 397pp

FWP. 2010. Montana's bighorn sheep conservation strategy. Montana Fish, Wildlife & Parks. Helena, MT. 311pp

FWP. 2017. Mount Silcox Wildlife Management Area Forest Management Plan. Montana Fish, Wildlife & Parks. Thompson Falls, MT. 88pp

Appendix A
MOUNT SILCOX WMA FOREST HABITAT PROJECT
SILVICULTURAL PRESCRIPTIONS

Prepared by: Jason Parke, Forester, Montana Fish, Wildlife & Parks

Date: May 17, 2017

Background:

The Mount Silcox Wildlife Management Area (MSWMA) is 1,535 acres in size and located just east of Thompson Falls in Sanders County, Montana. It was acquired in 1990 with the primary goal of providing winter and spring range for bighorn sheep, winter range for elk, year-round habitat for white-tailed deer and mule deer and turkeys, and to provide recreational access to adjacent public lands. Approximately 1,084 acres of the MSWMA are forested and these forests are managed for a variety of habitat functions such as providing thermal cover and snow intercept that allow big-game animals conserve energy during harsh winter conditions, security, and native forage. Additionally, these forests provide habitat for wide variety small mammals, furbearers, birds, and amphibians.

Montana Fish, Wildlife & Parks (FWP) proposes to use a combination of timber harvest, hand thinning, and prescribed burning to enhance forested habitat on 92 acres of the MSWMA. The project was designed to meet the goals of the MSWMA and is consistent with statutory requirements of § 87-1-201(9)(a)(iv) Montana Code Annotated [MCA], which directs the department to “address fire mitigation, pine beetle infestation, and wildlife habitat enhancement...”. The areas selected for treatment by FWP managers were identified as priorities in the MSWMA Forest Management Plan completed in February 2017 (copies available at the Thompson Falls Resource office or at the Habitat Bureau Office, Wildlife Division in Helena, MT). Any revenue generated from the sale of timber will be used to offset the costs of the treatments and any additional revenue will be deposited in FWP’s Forest Management Account to be used for future forest management projects.

Project Objectives:

- Improve aspen habitats
- Enhance or create openings in the forest canopy to increase bunchgrass and woody browse production
- Promote development of diverse, multi-story stand structure favored by sensitive species including Cassin’s finch, Clark’s nutcracker, Evening grosbeak, Lewis’s woodpecker, Pileated woodpecker, and Varied thrush.
- Implement forestry treatments that mimic ecological processes, promote development of ecologically site-appropriate habitat conditions, and reduce the susceptibility of forests to uncharacteristic disturbance events (such as stand replacement fires and bark beetle epidemics)
- Sell the resulting merchantable timber by-products (sawlogs, pulp, post and pole) to offset the cost of the treatment and generate revenue for the FWP Forest Management Account

**MOUNT SILCOX WMA FOREST HABITAT PROJECT
SILVICULTURAL PRESCRIPTION**

Unit Number(s): 1A	Location: S10,11-T21N-R29W	Acres: 2
Elevation: 2,800	Slope: 15%	Aspect(s): SW
Habitat type: Aspen stand within h.t. PSME/PHMA-PHMA (261)		
Soils: 22E – Winkler gravelly sandy loam		

DESCRIPTION OF STAND(S):

Unit location/access: This unit includes the aspen stand and approximately 60-100 feet of the surrounding conifer stand and is situated on the northeast side of Ashley Creek near the junction of the MSWMA Main Road and the old road that continues along the north side of Ashley Creek.

Forest composition, size class, and stocking: Nearly pure aspen stand within very little conifer encroachment within the stand. The aspen stand is composed of well-stocked, relatively mature clones in the center (average DBH 8-10" and approximately 50 feet tall) with some younger seedling/sapling sized trees along the main road and around the exterior. Expansion of the aspen clone is restricted by mature conifers with dense understory vegetation outcompeting aspen for growing space adjacent to the clone. The conifer stand is composed of primarily mature, well-stocked Douglas-fir (70%) and ponderosa pine (30%) averaging 17" DBH and approximately 80 feet tall.

Forest density, structure, and age: Approximately 120 BA/acre, stem exclusion structural class, and the age of mature conifers is approximately 130 years. The age of aspen is estimated to be 40 to 50 years old.

Snags and coarse woody debris: Very low snag density and very little CWD.

Insect and disease: Douglas-fir dwarf mistletoe is present at very low levels. Minor needle blight (*Lophodermium*) infection on ponderosa pine.

Fire regime, succession, and fire risk: This stand is in fire group 6 – moist Douglas-fir habitat types, which were historically characterized by frequent, low to mixed severity fires that favored the development of open stands of mature Ponderosa pine and Douglas-fir and also favored aspen on suitable habitat. Historically, aspen occupied larger areas where it occurred. The current stand is a result of fire exclusion favoring conifer succession in areas capable of being occupied by aspen (moist microsite adjacent to Ashley Creek). Logging occurred in this stand in the mid-1970's and may have favored the development of the current aspen stand. The current expected fire type in this stand under moderate conditions is a surface fire.

Rare plants and noxious weeds: No known rare plants exist within the stand. Noxious weeds include primarily spotted knapweed along and adjacent to the road.

TREATMENT OBJECTIVES:

- Reduce conifer competition and shading around the outside edge of the aspen stand
- Create favorable conditions for aspen regeneration
- Fell submerchantable trees to discourage ungulate browsing
- Retain some conifers consistent with the historical conifer aspen/conifer mix
- Create large downed logs for grouse drumming logs
- Desired future stand structure is an uneven-aged aspen stand

Unit 1A - Photo of aspen stand surrounded by conifers. The objective is to promote aspen regeneration within 60-100 feet of the area currently occupied by conifers.



PRESCRIBED TREATMENT:

Silvicultural System: Uneven-aged

Prescription(s):

- Improvement cutting (aspen enhancement) – Remove the majority of conifers within 60 to 100 feet of the edge of the aspen stand to create an area for aspen regeneration to occur and to increase sunlight to the existing stand. Aspen primarily regenerates through root sprouting. The shallow, spreading root systems of aspen can extend laterally over 100 feet. The conditions needed for sprouting to occur are a combination of hormone release (cytokinin) from mature stems, removal of canopy shade, adequate soil moisture, and increased soil temperatures.
- Prescribed burning – The majority of slash and fine fuels should be retained throughout the unit to provide a fuel bed to carry a broadcast burn through conifer portion of the stand and penetrate the edge of the aspen stand to extent practicable. A *Prescribed Fire Burn Plan* will be completed prior to implementing a prescribed burn.

Residual trees/marketing guidelines:

- Retain all aspen and protect existing aspen seedling/saplings sized trees.
- Retain all snags and live trees with multiple tops, abnormally large diameter branches, or deformed/cull trees.
- Leave tree mark approximately 5 to 6 trees per acre (variable spacing) of the largest available conifers (species preference is ponderosa pine then Douglas-fir) with a horizontal band of

ORANGE paint at or above breast height and a mark below stump height. Of these trees, 1 to 2 of the largest diameter trees will be selected to be felled and delimbed to provide grouse drumming logs. The bole should be left attached to the stump (hinged) and be suspended 2 to 4 feet off the ground.

- Submerchantable trees (less than 16-foot log to a 3-inch top) shall be directionally felled with the holding wood left hinged and the stem suspended off the ground to reduce elk and deer mobility throughout and around the perimeter of the stand to the extent practicable.

Harvesting system: Ground-based yarding

Slash treatment: The majority of slash should be lopped and scattered within the unit to create a fuel bed to carry a broadcast burn.

SCHEDULE OF TREATMENTS:

- December 1, 2017 through March 1, 2018: Winter logging operating period
- July 15, 2018 through October 1, 2018: Summer logging operating period
- December 1, 2018 through March 1, 2019: Winter logging operating period
- Summer/Fall 2019: Final clean-up and BMPs. Hand-fall grouse drumming logs and submerchantable trees.
- Spring 2020: Prescribed burn
- Summer 2021: Monitor aspen regeneration, weeds
- Summer 2023: Monitor aspen regeneration, weeds
- Summer 2035: Stand exam
- Summer 2050: Stand exam

**MOUNT SILCOX WMA FOREST HABITAT PROJECT
SILVICULTURAL PRESCRIPTION**

Unit Number(s): 1B

Location: S12-T21N-R29W

Acres: 2

Elevation: 2,600

Slope: 5 to 40%

Aspect(s): flat to SW

Habitat type: Aspen stand within h.t. PSME/SYAL-AGSP (311)

Soils: 421B – Selon fine sandy loam

DESCRIPTION OF STAND(S):

Unit location/access: This unit includes the mixed conifer/aspen stand on the east side of the MSWMA between the powerlines and the base of the cliffs. The stand is situated along the toe of the talus slope. A short, temporary jump-up road off of the powerline road will be needed to access the unit. The road location does not require excavation or clearing of trees, a snow road is preferred.

Forest composition, size class, and stocking: This stand is a mixed conifer/aspen stand composed of well-stocked, relatively mature ponderosa pine (60%) and Douglas-fir (30%) with pole-sized aspen occurring in clumps (10%). The conifer component averages 16" DBH and approximately 70 feet tall. The aspen average 4" DBH and approximately 35 feet tall. Very few seedling/sapling sized trees occur within the stand.

Forest density, structure, and age: Approximately 120 BA/acre, stem exclusion structural class, and the age of mature conifers is approximately 90 years. The age of aspen is estimated to be 15-30 years old.

Snags and coarse woody debris: Very low snag density and very little CWD.

Insect and disease: Douglas-fir dwarf mistletoe is present at very low levels. Minor needle blight (*Lophodermium*) infection on ponderosa pine.

Fire regime, succession, and fire risk: This stand is in fire group 4 – warm, dry Douglas-fir habitat types, which were historically characterized by frequent, low intensity fires that favored the development of open stands of mature Ponderosa pine and Douglas-fir and also favored aspen on suitable habitat. Historically, aspen occupied larger areas where it occurred. The current stand is a result of fire exclusion favoring conifer succession in areas capable of being occupied by aspen (moist microsite along the toe of the talus slope). Logging occurred in this stand in the mid-1970's and may have favored the development of the current aspen stand. The current expected fire type in this stand under moderate conditions is a surface fire.

Rare plants and noxious weeds: No known rare plants exist within the stand. Noxious weeds include primarily spotted knapweed. Leafy spurge is present southeast of the stand near the east entrance to the MSWMA.

TREATMENT OBJECTIVES:

- Reduce conifer competition and shading to promote growth and regeneration of aspen
- Create favorable conditions for aspen regeneration
- Fell submerchantable trees to discourage ungulate browsing
- Retain some conifers consistent with the historical conifer aspen/conifer mix
- Create large downed logs for grouse drumming logs
- Desired future stand structure is an uneven-aged aspen stand
- Avoid disturbing old homesite foundation, apple trees, and old can dumps outside the unit (south of the unit boundary)

Unit 2B - Photo of an aspen clump at the toe of the talus slope with conifers below. The objective is to promote aspen growth and regeneration.



PRESCRIBED TREATMENT:

Silvicultural System: Uneven-aged

Prescription(s):

- Improvement cutting (aspen enhancement) – Remove the majority of conifers within 60 to 100 feet of aspen clumps to create openings for aspen regeneration to occur and to increase sunlight to the existing stand. Aspen primarily regenerates through root sprouting. The shallow, spreading root systems of aspen can extend laterally over 100 feet. The conditions needed for sprouting to occur are a combination of hormone release (cytokinin) from mature stems, removal of canopy shade, adequate soil moisture, and increased soil temperatures.
- Prescribed burning – The majority of slash and fine fuels should be retained throughout the unit to provide a fuel bed to carry a broadcast burn through conifer portion of the stand and penetrate the edge of the aspen stand to extent practicable. A *Prescribed Fire Burn Plan* will be completed prior to implementing a prescribed burn.

Residual trees/markings guidelines:

- Retain all aspen and protect existing aspen seedling/saplings sized trees.
- Retain all snags and live trees with multiple tops, abnormally large diameter branches, or deformed/cull trees.
- Within 60 to 100 feet of aspen clumps, leave tree mark approximately 5 to 6 trees per acre (variable spacing) of the largest available conifers (species preference is ponderosa pine then

Douglas-fir) with a horizontal band of **ORANGE** paint at or above breast height and a mark below stump height. Of these trees, 1 to 2 of the largest diameter trees will be selected to be felled and delimbed to provide grouse drumming logs. The bole should be left attached to the stump (hinged) and be suspended 2 to 4 feet off the ground.

- Beyond 60 to 100 feet from aspen clumps, leave tree mark dominant and codominant conifers at approximately 40 to 60-foot spacing (species preference is ponderosa pine then Douglas-fir). Younger and smaller open grown trees should also be left where they are not directly competing with dominant trees.
- Submerchantable trees (less than 16-foot log to a 3-inch top) shall be directionally felled with the holding wood left hinged and the stem suspended off the ground to reduce elk and deer mobility throughout and around the perimeter of the stand to the extent practicable.

Harvesting system: Ground-based yarding. Hand felling and winchline may be needed to harvest trees in rocky areas.

Slash treatment: The majority of slash should be lopped and scattered within the unit to create a fuel bed to carry a broadcast burn.

SCHEDULE OF TREATMENTS:

- December 1, 2017 through March 1, 2018: Winter logging operating period
- July 15, 2018 through October 1, 2018: Summer logging operating period
- December 1, 2018 through March 1, 2019: Winter logging operating period
- Summer/Fall 2019: Final clean-up and BMPs. Hand-fall grouse drumming logs and submerchantable trees.
- Spring 2020: Prescribed burn
- Summer 2021: Monitor aspen regeneration, weeds
- Summer 2023: Monitor aspen regeneration, weeds
- Summer 2035: Stand exam
- Summer 2050: Stand exam

MOUNT SILCOX WMA FOREST HABITAT PROJECT SILVICULTURAL PRESCRIPTION

Unit Number(s): 2A	Location: S11-T21N-R29W	Acres: 8
Unit Number(s): 2B	Location: S11-T21N-R29W	Acres: 8
Unit Number(s): 2C	Location: S11-T21N-R29W	Acres: 4
Unit Number(s): 2D	Location: S11-T21N-R29W	Acres: 7
Unit Number(s): 2E	Location: S11-T21N-R29W	Acres: 8
Elevation: 2,800 - 3,500	Slope: 10 to 45%	Aspect(s): SW

Habitat type: PSME/VACA (250)

Soils: 22E – Winkler gravelly sandy loam/ 25D – Wildgen gravelly loam

DESCRIPTION OF STAND(S):

Unit location/access: These units are part of a larger single-storied Douglas-fir stand in the middle of the MSWMA to the east and north of the BNSF communication tower. All the units are accessed off the MSWMA Main Road. Units 2B and 2E will require long skidding distances (up to 2,500 feet).

Forest composition, size class, and stocking: These stands are predominantly composed of well-stocked, relatively mature Douglas-fir (81%) and ponderosa pine (19%). The average DBH of merchantable trees is 14" and the average height is approximately 75 feet tall. The overall stand is well stocked (>70% canopy closure) but the individual treatment units are moderate to well stocked (35 to 50%). Very few seedling/sapling sized trees occur in the understory due to the dense overstory, but do occur occasionally in openings as clumps of Douglas-fir approximately 1-2 inches DBH and 15 feet tall.

Forest density, structure, and age: Approximately 96 BA/acre, stem exclusion structural class, and the age of mature conifers is approximately 130 years.

Snags and coarse woody debris: Very low snag density (approximately 2.5 snags per acre) and very little CWD (approximately 0.2 tons per acre > 3").

Insect and disease: Douglas-fir dwarf mistletoe infection is present in portions of some units. Douglas-fir bark beetle present at low levels. Minor needle blight (*Lophodermium*) infection on ponderosa pine.

Fire regime, succession, and fire risk: This stand is in fire group 6 – moist Douglas-fir habitat types, which were historically characterized by frequent, low to moderate severity fires that favored the development of open stands of mature Ponderosa pine and Douglas-fir and occasionally created mixed age class patches resulting from moderate severity fires that occurred when periods of time between fires were longer due cooler/wetter climatic episodes. The current stand is a result of past timber harvesting that removed the largest and oldest ponderosa pine and Douglas-fir as well as fire exclusion which has allowed the succession of predominantly Douglas-fir to develop into a dense, single-storied stand structure. The current expected fire type in this stand under moderate conditions is a surface fire. Stand replacement would be possible if fire was able to ascend into the overstory on steeper slopes and where the canopy is continuous.

Rare plants and noxious weeds: Diamond Clarkia and Clustered Lady's-slipper, both listed as species of concern in Montana, have been found in adjacent stands on U.S. Forest Service land. If these species are located within the proposed treatment units, the appropriate habitat area will be excluded from timber harvest. According to the Montana Natural Heritage Program's Montana Field Guide, fire

suppression is noted as a cause for loss of habitat for Diamond Clarkia. Noxious weeds include primarily spotted knapweed.

TREATMENT OBJECTIVES:

- Reduce canopy coverage to increase sunlight to the forest floor where it will enhance understory species (such as bluebunch wheatgrass, rough fescue, Idaho fescue, serviceberry, Rocky Mountain maple, and Douglas-fir) that are important big-game forage species during winter and spring.
- Promote development of multi-story stand structure
- Desired future stand structure (of the overall stand) is old forest, multi-strata. The majority of the overall stand will retain areas greater than 200 yards wide with greater than 70% canopy cover of mature trees (>9" DBH), preferably Douglas-fir, to provide snow intercept and thermal cover during harsh winter conditions
- Protect existing clumps of advanced regeneration

Unit 2 – These units were designed to incorporate areas such as those in the foreground where existing somewhat open areas would be expanded to promote forage and conifer regeneration while dense areas (such as the lower left side of this photo) would be left to provide dense canopy cover contributing to security, snow intercept, and thermal cover.



PRESCRIBED TREATMENT:

Silvicultural System: Uneven-aged

Prescription(s): Group selection – Layout was designed to create irregular openings within the predominantly single-storied Douglas-fir stand.

Residual trees/marketing guidelines: Cut-tree mark merchantable trees (≥ 3.0 inches top dib, ≥ 16 foot log, and meeting minimum log quality requirements) with a horizontal band of **BLUE** paint and a mark below stump height based on the desired post-harvest condition:

- Desired residual live conifer tree density is 40 to 100 BA/acre distributed as clumps and openings within treatment units, avoid even-spacing.
- Retain all snags and live trees with multiple tops, abnormally large diameter branches, or deformed/cull trees.
- When Douglas-fir mistletoe is encountered, removal should be either all or none of mistletoe infected trees since thinning the infected Douglas-fir will likely increase the level of infection.
- Desired leave tree characteristics:
 - Trees in dominant and codominant crown position
 - Greater than 35% live crown ratio
 - Species preference to leave is western larch (if present), ponderosa pine, Douglas-fir
 - Younger and smaller open grown trees should also be left where they are not directly competing with dominant trees.

Harvesting system: Ground-based yarding.

Slash treatment:

- Slash concentrations must meet or exceed Montana's State Hazard reduction law
- Leave an average of 5 to 10 tons per acre of coarse woody debris within the treatment unit
- Material larger than 3 inches in diameter shall not be piled
- Conduct burning when fires will not spread and fires will go out after fuel in the pile is consumed.
- Part of the pile may need to be covered to ensure ignition and consumption
- If whole-tree yarding:
 - Minimize the size and number of roadside landing piles by leaving some fine branches and leafy material in the treatment unit
 - The burned area will be grass seeded with a native grass seed mix the following Spring
- If in-woods processing, slash will be piled within the treatment unit based on the following guidelines:
 - Slash concentrations will be piled to a level that meets or exceeds Montana's State Hazard reduction law
 - Piles will be constructed in openings to avoid damaging residual trees
 - Piles should be less than 8 ft x 8ft x 8ft
 - If possible, piles should be built on skid trails, already disturbed areas, or in areas with little or no bunchgrass coverage

SCHEDULE OF TREATMENTS:

- December 1, 2017 through March 1, 2018: Winter logging operating period
- July 15, 2018 through October 1, 2018: Summer logging operating period
- December 1, 2018 through March 1, 2019: Winter logging operating period
- Summer/Fall 2019: Final clean-up, BMPs, and pile burning.
- Spring 2020: Grass seed roadside landing piles (if applicable)

- Summer 2021: Monitor regeneration, weeds
- Summer 2023: Monitor regeneration, weeds
- Summer 2035: Stand exam
- Summer 2050: Stand exam

**MOUNT SILCOX WMA FOREST HABITAT PROJECT
SILVICULTURAL PRESCRIPTION**

Unit Number(s): 3 **Location:** S11-T21N-R29W **Acres:** 15
Elevation: 2,900 **Slope:** 30% **Aspect(s):** South
Habitat type: PSME/SYAL-CARU (311)
Soils: 22E – Winkler gravelly sandy loam

DESCRIPTION OF STAND(S):

Unit location/access: This unit lies on a south facing bench below the BNSF communication tower. A spur road off of the MSWMA Main Road accesses the top of the unit and ends where the road forks underneath the power line that bisects the unit.

Forest composition, size class, and stocking: This unit is composed predominantly of moderately-stocked, relatively mature ponderosa pine (81%) and Douglas-fir (19%). The average DBH of merchantable trees is 13" and the average height is approximately 70 feet tall. The overall stand is moderately stocked (26 to 50% canopy closure). Seedling/sapling sized trees are nearly absent in the understory.

Forest density, structure, and age: Approximately 120 BA/acre, stem exclusion structural class, and the age of mature conifers is approximately 130 years.

Snags and coarse woody debris: Very low snag density (approximately 1.8 snags per acre) and very little CWD (approximately 2.7 tons per acre > 3").

Insect and disease: Minor needle blight (*Lophodermium*) infection on ponderosa pine. Low levels of mountain pine beetle infestation. Recent pine engraver (*Ips pini*) infestation in adjacent stand.

Fire regime, succession, and fire risk: This stand is in fire group 4 – warm, dry Douglas-fir habitat types, which were historically characterized by frequent, low intensity fires that favored the development of open stands of mature Ponderosa pine. The current stand is a result of past timber harvesting that removed the largest and oldest ponderosa pine and Douglas-fir as well as fire exclusion which has allowed the stand to develop into a dense, single-storied stand structure. The current expected fire type in this stand under moderate conditions is a surface fire.

Rare plants and noxious weeds: No known rare plants exist within the stand. Noxious weeds include primarily spotted knapweed.

TREATMENT OBJECTIVES:

- Reduce canopy coverage to increase sunlight to the forest floor where it will enhance understory species (such as bluebunch wheatgrass, rough fescue, Idaho fescue, serviceberry, Rocky Mountain maple, and Douglas-fir) that are important big-game forage species during winter and spring.
- Desired future stand structure is old forest, single stratum with an average canopy closure of less than 35% and an average live tree density of less than 90 BA/acre composed primarily of mature, large diameter ponderosa pine. This forest structure is favored by sensitive species such as Cassin's finch, Clark's nutcracker, Lewis's woodpecker, and Pileated woodpecker which have been previously documented as occurring on the MSWMA.

Unit 3 – Photo showing typical condition is unit 3, canopy has begun to shade out desirable understory species such as bluebunch wheatgrass and Idaho fescue. The objective of the treatment in this unit is to reduce canopy closure to increase bunchgrass and woody browse production and promote stand development towards a late seral, open canopy successional stage.



PRESCRIBED TREATMENT:

Silvicultural System: Uneven-aged

Prescription(s): Thin from below – remove trees in lower crown classes, favoring dominant and codominant ponderosa pine.

Residual trees/marketing guidelines: Cut-tree mark merchantable trees (≥ 3.0 inches top dib, ≥ 16 foot log, and meeting minimum log quality requirements) with a horizontal band of **BLUE** paint and a mark below stump height based on the desired post-harvest condition:

- Desired residual live conifer tree density is 40 to 80 BA/acre at a variable spacing, avoid even-spacing.
- Retain all snags and live trees with multiple tops, abnormally large diameter branches, or deformed/cull trees.
- Desired leave tree characteristics:
 - Trees in dominant and codominant crown position
 - Greater than 35% live crown ratio
 - Species preference to leave is western larch (if present), ponderosa pine, Douglas-fir
 - Younger and smaller open grown trees should also be left where they are not directly competing with dominant trees.

Harvesting system: Ground-based yarding.

Slash treatment:

- Slash concentrations must meet or exceed Montana's State Hazard reduction law
- Leave an average of 5 to 10 tons per acre of coarse woody debris within the treatment unit
- Material larger than 3 inches in diameter shall not be piled
- Conduct burning when fires will not spread and fires will go out after fuel in the pile is consumed.
- Part of the pile may need to be covered to ensure ignition and consumption
- If whole-tree yarding:
 - Minimize the size and number of roadside landing piles by leaving some fine branches and leafy material in the treatment unit
 - The burned area will be grass seeded with a native grass seed mix the following Spring
- If in-woods processing, slash will be piled within the treatment unit based on the following guidelines:
 - Slash concentrations will be piled to a level that meets or exceeds Montana's State Hazard reduction law
 - Piles will be constructed in openings to avoid damaging residual trees
 - Piles should be less than 8 ft x 8ft x 8ft
 - If possible, piles should be built on skid trails, already disturbed areas, or in areas with little or no bunchgrass coverage

SCHEDULE OF TREATMENTS:

- December 1, 2017 through March 1, 2018: Winter logging operating period
- July 15, 2018 through October 1, 2018: Summer logging operating period
- December 1, 2018 through March 1, 2019: Winter logging operating period
- Summer/Fall 2019: Final clean-up, BMPs, and pile burning.
- Spring 2020: Grass seed roadside landing piles (if applicable)
- Summer 2021: Monitor regeneration, weeds
- Summer 2023: Monitor regeneration, weeds
- Summer 2035: Stand exam
- Summer 2050: Stand exam

**MOUNT SILCOX WMA FOREST HABITAT PROJECT
SILVICULTURAL PRESCRIPTION**

Unit Number(s): 4A	Location: S11-T21N-R29W	Acres: 5
Unit Number(s): 4B	Location: S11, 12-T21N-R29W	Acres: 29
Elevation: 2,600 to 3,100	Slope: 10 to 40%	Aspect(s): SW

Habitat type: Predominantly PSME/SYAL-AGSP (311). Eastern part of 4B is PSME/PHMA-CARU (261)

Soils: 532E – Winkler-Sharrott-Rock outcrop complex

DESCRIPTION OF STAND(S):

Unit location/access: These units lie on a bench on the eastern 1/3 of the MSWMA, bounded by the cliffs to the east and the major dry drainage that bisects the eastern portion MSWMA to the west. A spur road off the power line road accesses unit 4A and an existing skid trail taking off from an old landing area in unit 4A accesses unit 4B.

Forest composition, size class, and stocking: These units are combination of two different stand types with some areas dominated by a Douglas-fir overstory with an oceanspray/ninebark understory and some areas dominated by ponderosa pine with a bunchgrass/shrub/forb understory. On average, the units are composed predominantly of well to moderately-stocked, relatively mature ponderosa pine (56%) and Douglas-fir (44%). The average DBH of merchantable trees is 15" and the average height is approximately 75 feet tall. The overall stand is moderately stocked (26 to 50% canopy closure). Seedling/sapling sized trees are nearly absent in the understory.

Forest density, structure, and age: Approximately 114 BA/acre, stem exclusion structural class, and the age of mature conifers is approximately 130 years.

Snags and coarse woody debris: Low snag density (approximately 3 snags per acre) and very little CWD (approximately 1.5 tons per acre > 3").

Insect and disease: Douglas-fir dwarf mistletoe infection is present in portions of some units. Minor needle blight (*Lophodermium*) infection on ponderosa pine. Low levels of mountain pine beetle infestation.

Fire regime, succession, and fire risk: This stand is in fire group 4 – warm, dry Douglas-fir habitat types, which were historically characterized by frequent, low intensity fires that favored the development of open stands of mature Ponderosa pine. The current stand is a result of past timber harvesting that removed the largest and oldest ponderosa pine and Douglas-fir as well as fire exclusion which has allowed the stand to develop into a dense, single-storied stand structure. The current expected fire type in this stand under moderate conditions is a surface fire. Stand replacement would be possible if fire was able to ascend into the overstory on steeper slopes and where the canopy is continuous.

Rare plants and noxious weeds: No known rare plants exist within the stand. Noxious weeds include primarily spotted knapweed.

TREATMENT OBJECTIVES:

- These units are a combination of two different stand types and will have a combination of objectives.
- In open, ponderosa pine dominated areas:

- Reduce canopy coverage to increase sunlight to the forest floor where it will enhance understory species (such as bluebunch wheatgrass, rough fescue, Idaho fescue, serviceberry, Rocky Mountain maple, and Douglas-fir) that are important big-game forage species during winter and spring.
- Desired future stand structure is old forest, single stratum with an average canopy closure of less than 35% and an average live tree density of less than 90 BA/acre composed primarily of mature, large diameter ponderosa pine. This forest structure is favored by sensitive species such as Cassin's finch, Clark's nutcracker, Lewis's woodpecker, and Pileated woodpecker which have been previously documented as occurring on the MSWMA
- In denser, Douglas-fir dominated areas:
 - Promote development of multi-story stand structure by creating openings to promote conifer regeneration
 - Desired future stand structure is old forest, multi-strata. Overall stocking should vary from 40 to 100 BA/acre retaining a clumpy distribution of dense Douglas-fir and creating openings to promote mature ponderosa pine and enhance bunchgrass and woody browse production.

Unit 4A & 4B – The two photos show the two different stand types within unit 4. Open, ponderosa pine dominated areas (first photo) would be treated primarily to reduce canopy closure to increase bunchgrass and woody browse production and promote stand development towards a late seral, open canopy successional stage. Dense, Douglas-fir dominated areas (second photo) would be treated to create some openings promoting stand development towards a multi-storied stand structure while retaining some areas of dense Douglas-fir for big-game security, thermal cover, and bedding areas.





PRESCRIBED TREATMENT:

Silvicultural System: Uneven-aged

Prescription(s): Combination

- Open, ponderosa pine dominated areas: Thin from below – remove trees in lower crown classes, favoring dominant and codominant ponderosa pine
- Dense Douglas-fir dominated areas: Group selection – create small, irregular openings (less than 2 tree lengths/approximately 150 feet wide) within the predominantly single-storied Douglas-fir stand.

Residual trees/marketing guidelines: Cut-tree mark merchantable trees (≥ 3.0 inches top dib, ≥ 16 foot log, and meeting minimum log quality requirements) with a horizontal band of **BLUE** paint and a mark below stump height based on the desired post-harvest condition:

- Retain all snags and live trees with multiple tops, abnormally large diameter branches, or deformed/cull trees.
- When Douglas-fir mistletoe is encountered, removal should be either all or none of mistletoe infected trees since thinning the infected Douglas-fir will likely increase the level of infection.
- Younger and smaller open grown trees should also be left where they are not directly competing with dominant trees.
- Desired leave tree characteristics:
 - Trees in dominant and codominant crown position
 - Greater than 35% live crown ratio

- Species preference to leave is western larch (if present), ponderosa pine, Douglas-fir
- Open, ponderosa pine dominated areas:
 - Desired residual live conifer tree density is 40 to 80 BA/acre at a variable spacing, avoid even-spacing.
- Denser, Douglas-fir dominated areas:
 - Create small, irregular openings up to 150 feet wide with residual live conifer tree density is 40 to 100 BA/acre at a variable spacing while retaining clumps of trees at their existing density.

Harvesting system: Ground-based yarding.

Slash treatment:

- Slash concentrations must meet or exceed Montana's State Hazard reduction law
- Leave an average of 5 to 10 tons per acre of coarse woody debris within the treatment unit
- Material larger than 3 inches in diameter shall not be piled
- Conduct burning when fires will not spread and fires will go out after fuel in the pile is consumed.
- Part of the pile may need to be covered to ensure ignition and consumption
- If whole-tree yarding:
 - Minimize the size and number of roadside landing piles by leaving some fine branches and leafy material in the treatment unit
 - The burned area will be grass seeded with a native grass seed mix the following Spring
- If in-woods processing, slash will be piled within the treatment unit based on the following guidelines:
 - Slash concentrations will be piled to a level that meets or exceeds Montana's State Hazard reduction law
 - Piles will be constructed in openings to avoid damaging residual trees
 - Piles should be less than 8 ft x 8ft x 8ft
 - If possible, piles should be built on skid trails, already disturbed areas, or in areas with little or no bunchgrass coverage

SCHEDULE OF TREATMENTS:

- December 1, 2017 through March 1, 2018: Winter logging operating period
- July 15, 2018 through October 1, 2018: Summer logging operating period
- December 1, 2018 through March 1, 2019: Winter logging operating period
- Summer/Fall 2019: Final clean-up, BMPs, and pile burning.
- Spring 2020: Grass seed roadside landing piles (if applicable)
- Summer 2021: Monitor regeneration, weeds
- Summer 2023: Monitor regeneration, weeds
- Summer 2035: Stand exam
- Summer 2050: Stand exam